



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,821	01/06/2006	Markku Keskiniva	47121-5018-00 (220263)	3523
55694 7590 06/19/2009 DRINKER BIDDLE & REATH (DC) 1500 K STREET, N.W. SUITE 1100 WASHINGTON, DC 20005-1209				
EXAMINER				
LOPEZ, MICHELLE				
ART UNIT		PAPER NUMBER		
3721				
MAIL DATE		DELIVERY MODE		
06/19/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents  
United States Patent and Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/563,821  
Filing Date: January 06, 2006  
Appellant(s): KESKINIVA ET AL.

Markku Keskiniva et al.  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 4/14/09 appealing from the Office action mailed 8/20/08.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

The amendment after final rejection filed on 11/20/08 has been entered.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: Whether claims 1-6, 13-14, 16-17, 19-21, 28-29, and 31-32 are anticipated under 35 U.S.C. §102(b) by U.S. Patent No. 4,102,408 to Ludvigson. Whether claims 12, 18, 27 and 33 are obvious under 35 U.S.C. §103(a) over Ludvigson. Whether claims 7-11 and 22-26 are obvious under 35 U.S.C. §103(a) over Ludvigson, in view of U.S. Patent No. 7,032,684 to Muuttonen. Whether claims 15 and 30 are

obvious under 35 U.S.C. §103(a) over Ludvigson in view of U.S. Patent No. 7,252,154 to Keskiniva et al.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

4102408	Ludvigson	7-1978
7032684	Muuttonen et al.	4-2006
7252154	Keskiniva et al.	8-2007

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

a. Claims 1-6, 13-14, 16-17, 19-21, 28-29, and 31-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Ludvigson USPN 4,102,408.

Ludvigson discloses a pressure fluid operated impact device comprising a frame 10; a tool 11; control means (23, 24) for controlling pressure fluid feed by the impact device; means for generating a stress impulse in the tool by the pressure of a pressure fluid (col. 3, lines 12-50) and upon an impact of a piston 13 with the tool 11; a working chamber 12 entirely filled with

pressure fluid and a piston 13 movably mounted on said chamber, an end of the piston 14 facing the tool coming into contact with the tool either directly or indirectly at least during the generation of the stress pulse (i.e. upon impacting said piston with said tool; col. 3, lines 12-23); a pressure surface located towards the working chamber; and energy charging means 15 for charging energy of the pressure fluid to be fed to the impact device necessary for generating the stress impulse.

Regarding claim 1, lines 7-8, it is deemed that the generation of the stress impulse in the tool is created upon a direct contact of the piston with the tool upon impacting the tool with said piston and by pushing the piston against the tool via the control and/or adjustment of the pressure fluid within the working chamber during operation of the device (see col. 3, lines 17-50), as broadly claimed. Note that the claim does not disclose either direct or indirect contact of the piston with the tool during the driving operation, rather upon generation of said stress pulse. Therefore, the impact contact between the piston and the tool is interpreted as the generation of stress impulse of the tool.

Regarding claim 1, lines 12-17, Ludvigson's control means are configured to allow periodically and alternately a pressure fluid having a pressure higher than the pressure of the pressure fluid present in the working chamber to flow to the working chamber, thus causing an increase in the pressure in the working chamber, consequently, compression of the pressure fluid within the working chamber 12 (by a backward movement of the piston upon resistance of the tool against the ground), and thereafter, variation and/or adjustment of the volume of the pressure fluid within the chamber will be capable of generate a force pushing the piston in the

direction of the tool, compressing the tool against the ground and thus generating a stress impulse in the tool during penetration of the tool against the ground (col. 3, lines 12-50).

Regarding claim 1, lines 18-20, the generation of the stress impulse ends substantially at the same time as the influence of the force on the tool ends (i.e. when the variation and/or adjustment of the pressure fluid within the working chamber ends, correspondingly, to discharge pressure fluid from the working chamber in order to enable the piston to return to its original position; col. 3, lines 51-61).

Ludvigson also discloses stop elements for stopping movement of the piston (col. 3, lines 33-61); energy charging space (15) filled with pressurized fluid and whose volume is larger compared with the volume of a pressure fluid amount to be fed in the working chamber (12). The control means (24) allow alternately pressure fluid to flow from the energy charging space (15) to the working chamber via (16) and to close connection between the energy charging space and the working chamber. The energy charging space is a tank (15) separate from the frame (10) and/or a gas accumulator (23). Means for returning the piston after an impact to its pre-impact position (col. 4, lines 27-34).

Ludvigson also discloses a method of generating a stress pulse in a pressure fluid operated impact device as discussed above.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

b. Claims 7-11 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludvigson USPN 4,102,408 in view of Muuttonen 7032684.

Ludvigson discloses the same claimed pressure fluid operated impact device comprising control means with a valve. Ludvigson fails to disclose wherein said valve have a plurality of openings in order to feed pressure fluid from the energy charging space via a plurality of feed channels to the working chamber simultaneously. Muuttonen shows an impact device comprising control means 18 with a valve having a plurality of openings in order to feed pressure fluid from an energy charging space 30 via a plurality of feed channels 22 to a working chamber as shown in fig. 3 for the purpose of providing a force pushing a driving piston in a direction of a tool, generating a stress pulse in the tool. It would have been obvious to one having ordinary skill in the art to have provided the control means of Ludvigson with a valve as taught by Muuttonen in order to simultaneously feeding pressure fluid to the working chamber by a plurality of channels. It is noted that although the modified invention of Ludvigson may not explicitly disclosed a "rotating control valve", the disclosed means for transferring hydraulic fluid from a fluid space reservoir to a discharge channel is the structural equivalent and serves the same function for the apparatus.

The modified invention of Ludvigson fails to disclose wherein a length and cross-section of each feed channel are mutually the same and wherein the two feed channels differ in length and/or cross-sectional area. It would have been an obvious matter of engineering choice to have

had length and cross-section area of said channels as claimed, since such a modification would have involved a mere change in the shape or form of a component. A change in shape or form is generally recognized as being within the level of ordinary skill in the art. In re Dailey, 149 USPQ 47 (CCPA 1976).

Muutonen also shows a valve 32.

Also, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the length of at least one feed channel adjustable, since it has been held that provision of a where needed, involves only routine skill in the art.

c. Claims 12, 18, 27, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludvigson USPN 4,102,408.

Ludvigson shows wherein the energy charging space is a tank 15, but fails to disclose wherein said tank walls, due to the influence of pressure, yield such that the volume of the energy charging space increase as pressure increase. The language "yield such that the volume of the energy charging space increase as pressure increase" is functional and afforded light weight because it is predicated on a future act. Furthermore, the functional language is no supported by sufficient structure to perform the joining of the ends of the wrapping material. Additionally, it would have been obvious to have provide the walls of Ludvigson tank 15 with a preferred material, i.e. an elastomer, capable of yield, i.e. expand, due increase influence of pressure, as a matter of engineering design choice.

Ludvigson also fails to specifically disclose that the length of movement of the piston is some millimeters. It would have been obvious to one having ordinary skill in the art at the time



the invention was made to have provided a desired range of movement of said piston, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

d. Claims 15 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludvigson USPN 4,102,408 in view of Keskiniva et al. USPN 7,252,154.

Ludvigson discloses a transmission piston as discussed above, but fails to disclose wherein said piston is a membrane type piston. Keskiniva shows a membrane type piston 4b. The substitution of one known element (membrane type piston as shown in Keskiniva) for another (transmission piston as shown in Ludvigson) would have been obvious to one of ordinary skill in the art at the time of the invention since the substitution of the membrane type piston shown in Keskiniva would have yielded predictable results, namely, positively transmitting pulse stress to the tool in Ludvigson to provide an impact.

#### **(10) Response to Argument**

a. Applicant first argues on page 5, that Ludvigson does not disclose an impact device as claimed. Applicant contends that Ludvigson's piston 13 is not in contact with the pile 11 before the stroke and the impact is created only by the hit of the hammer and the impact cap with the piston against the pile, wherein the pressure behind the piston is not changed during operation, and the stress pulse to the pile is not created by setting the piston under the influences of pressure, but rather by hitting the pile with the hammer. For the reasons set forth in the rejection, Ludvigson anticipates every element of the claim and should be affirmed.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” See MPEP § 2131..

Firstly, claim 1, as broadly claimed, merely discloses a working chamber entirely filled with pressure fluid, an end of the piston coming into contact with the tool either directly or indirectly at least during generation of stress pulse, and energy charging means for charging energy of the pressure fluid fed to the impact device necessary for generating the stress pulse. It is the Examiner opinion that the claim never point out when does such generation of stress pulse occurs. Neither discloses wherein the piston remains in contact with the tool during the driving operation of the tool against the ground, thereby maintaining a pushing force against said tool. Therefore, such generation of stress pulse, as broadly claimed, is being interpreted by the Examiner, as the instant wherein the piston 13 impacts the tool 11. Ludvigson as disclosed in the rejection, above, anticipates the elements set forth in the claim. Ludvigson discloses a cylinder 12 having a working chamber entirely filled with pressure fluid and in the working chamber a movably piston 13 (see col. 3, lines 8-11), wherein an end of the piston facing a tool 11 comes into contact with the tool directly at least during the generation of stress pulse (i.e. during the impact between the piston and the tool). Also note, that upon impacting the piston against the tool, the resistance encountered by the tool while penetrating the ground will create a pressure change behind Ludvigson’s piston, setting said piston under the influences of pressure, and thus maintaining a direct contact between the piston and the tool during compression of the tool against the ground (see col. 3, lines 24-50).

b. Applicant also argues on page 6, wherein claim 1 recites an energy charging means for charging energy of the pressure fluid, from which the pressure fluid having high

pressure is periodically allowed to affect the piston and alternately the pressure behind piston is allowed to be released, wherein in Ludvigson, this kind of periodical pressurizing and depressurizing of the cylinder behind the piston does not happen. This is not found persuasive. In the instance case, Ludvigson discloses an energy charging means (i.e. valve 23 and accumulator 24) for charging energy of the pressure fluid, from which the pressure fluid having high pressure is periodically allowed to affect the piston and alternately the pressure behind piston is allowed to be released as clearly describe in Ludvigson's col. 3, lines 51-61.

c. Applicant also argues on page 6, wherein in Ludvigson the stress pulse to the pile is not created by suddenly increasing the pressure behind the piston 13, since before meeting pile 11, piston 13 is in its foremost position because of the pressure behind it. Thus, increasing the pressure behind Ludvigson piston cannot create the stress pulse to the pile since piston 13 cannot move more forward in relation to the body 10 from its foremost position. This is not found persuasive. Firstly, the claim merely discloses wherein a force pushing the piston in the direction of the tool would compress the tool in the longitudinal direction and thus generate a stress pulse in the tool. Therefore, the claim does not requires the piston to move more forward in relation to the body 10 from its foremost position after the generation of the stress pulse, rather to maintain a pushing force after the generation of the stress pulse in order to compress the tool in the longitudinal direction against the ground. In Ludvigson, once the stress pulse (i.e. the impact between the piston and the tool) is being created, a stress pulse (i.e. a pushing force) transmitted to the pile is thus generate by a change and/or adjustment of a fluid pressure behind the piston, wherein such adjustment is related to the resistance encountered by the tool while penetrating the

ground, and thus such adjustment would be set to a desired level maintaining contact between the piston and the tool compressing the tool against the ground (see col. 3, lines 24-50).

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Michelle Lopez/  
Examiner, Art Unit 3721

Conferees:

/Rinaldi I Rada/  
Supervisory Patent Examiner, Art Unit 3721

/Henry Yuen/  
Special Programs Examiner, TC 3700